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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/747,976	12/27/2000	Takashi Kitae	56937-022	3643

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EXAMINER

PAREKH, NITIN

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 04/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/747,976

Applicant(s)
Kitae et al

Examiner
Nitin Parekh

Art Unit
2811



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Feb 4, 2002
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above, claim(s) 10-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-9, and 13-17 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirements.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 5-9 and 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda (US Pat. 6262785) in view of Sano et al (US Pat. 5822176) and further in view of Taniguchi et al (US Pat. 5952717) and Kodama et al (US Pat. 5277723).

Regarding claims 1-3, 5-7 and 9, Ikeda discloses an electronic part mounting element comprising:

- an electronic part (3 in Fig. 1)
- a coating/layer comprising conductive adhesive/resin ingredients being formed/provided on a surface of an external electrode (5 and 11 in Fig. 1; Col. 3, line

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15-23), the conductive adhesive layer containing conductive filler consisting of metals such as silver (Ag), palladium (Pd), copper (Cu), etc (Col. 2, line 57).

- an element comprising the coating/conductive adhesive (11 in Fig. 1; Col. 3, line 29)

to be mounted with the electronic part, and

- the conductive adhesive/coating electrically connecting the external electrode and the element to the connecting terminal (9 in Fig. 1)

(Fig. 1; Fig. 2-4; Col. 2, line 30- Col. 3, line 35).

Ikeda discloses the conductive adhesive layer containing filler/metals consisting silver and palladium but fail to specify using metal or an alloy/mixture consisting of silver, palladium, gold, platinum, nickel or zinc.

Sano et al teach using a conductive resin/paste containing conventional filler/metals or alloys of silver, palladium, gold, nickel, tin, etc. to form external electrodes (Col. 6, line 23-43).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to incorporate conductive filler consisting of metal, an alloy or mixture of silver, palladium, gold, platinum, nickel or zinc to achieve the desired conductivity and bonding strength using Sano et al's electrode design in Ikeda's electronic part.

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Regarding claim 8, Ikeda discloses a joining portion of the coating on the external electrode and the conductive adhesive but fails to specify the joining portion being shaped like a fillet.

Taniguchi et al teach conventional mounting of an external electrode of an electronic part to the substrate where a joining portion is shaped like a fillet (Fig. 11).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to incorporate a mounting of the electronic part such that the joining portion is shaped like a fillet to improve the bonding strength using Taniguchi et al and Sano et al's teachings in Ikeda's electronic part.

Regarding claims 13-17, as explained above for claim 1, Ikeda in view of Sano et al fail to specify the surface roughness (Ra) of the external electrode being set in a range of 0.1-10.0 microns or 1.0-5.0 microns.

Kodama et al teach using electronic parts comprising an internal and external wiring/conductors on inside and side surfaces where external surface has Ra value of about 1.0 micron or preferably 2.0 microns (Fig. 7c, 5c, 3c, etc.; Col. 7, line 35- Col. 8, line 20; Col. 11, line 35- Col. 12, line 55). Kodama et al further teach achieving the optimum Ra value by controlling the parameters such as firing shrinkage ratio, temperature, pressure, pore size of the material used for applying the pressure, etc. (Col. 11, line 50; Col. 8-12).

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Furthermore, the parameters such as a range of roughness of internal/external surfaces, shape of the external surface/electrode layer (convex, concave, etc.), pore size and thickness of various layers, etc. are a subject of routine experimentation and optimization in electronic/chip part fabrication technology art to achieve the desired bonding strength, adhesion and reliability.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to arrive at a surface roughness (Ra) range of the external electrode surface being 0.1-10.0 microns or 1.0-5.0 microns to improve the bonding strength, adhesion and reliability using Kodama et al and Sano et al's structures in Ikeda's electronic part.

Allowable Subject Matter

3. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Papers related to this application may be submitted directly to Art Unit 2811 by facsimile transmission. Papers should be faxed to Art Unit via Technology Center 2800 fax center located in Crystal Plaza 4, room 4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nitin Parekh whose telephone number in (703) 305-3410. The examiner can be normally reached on Monday-Friday from 08:30 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas, can be reached on (703) 308-2772. The fax number for the organization where this application or proceeding is assigned is (703) 308-7722 or 7724.

Nitin Parekh

04-09-02

Steven Loke
Primary Examiner

